

// Challenge: To grind two mating metal components, with a tight clearance requirement between their surfaces, to create a powered arthroscopic shaver used in orthopaedic joint surgeries.



GT-610 CNC



GT-610



P4K

Solution: In this application, **two tubes are assembled**, with as minimum a gap between the two parts as possible -sometimes as small as 0.0005" -so that the inner tube moves freely inside the outer tube without allowing debris to get caught between the surfaces. The tips of the tubes typically have a rounded guiding surface, and the outer tube has a window cut in it to expose the sharp edges of the inner tube, both difficult to manufacture in volume.

Using the Glebar **GT-610-CNC** to infeed grind the shape of the inner tube, we were able to maintain a ± 0.0002 " tolerance on the tip dimensions. At the same time, we ground 3 diameter features to within 0.0002" per diameter, maintaining a TIR of 0.0001" and producing a smooth 9 Ra surface finish on 304V Stainless steel with a ± 0.001 " wall thickness. We removed 0.012" in stock for the majority of the part and 0.004" off the tip geometry. The entire fully automated process was done in under 20 seconds, adjusting for part length variation, heat expansion, and a near zero tip geometry requirement. The Glebar process vastly reduced previous scrap rates due to tip geometry imperfections, as well as eliminated an extra step in the previous manufacturing method which left unacceptable tool marks on the surface.

For the outer sleeve, a **GT-610** thrufeed grinder is used to grind the OD of the blank tubes, maintaining a surface finish between 3-6 RMS and maintaining a comfortable 2-3 Cpk on the outside diameter of the part. Material removal of 0.005" with a tolerance requirement of ± 0.0005 " was met easily in a fully automated turnkey process. Our system also is utilizing a patent pending controlled motorized lateral work rest blade that adjusts the lateral position of the parts which is ideal when controlling the many features and tolerances of a shaver.

The **P4K** offline gauging system scans all parts in a cycle and feeds back diameter, including taper and radii, to the machine, correcting wheel dress shape automatically for the complete profile geometry in a matter of seconds, while drastically reducing setup time and improving quality control.



INNOVATION MANUFACTURED™
SINCE 1952

Glebar Company
565 East Crescent Avenue
Ramsey, New Jersey 07446

ISO 9001: 2008

201-337-1500 | info@glebar.com | www.glebar.com

